#3559
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WATER QUALITY MEMORANDUM
Utah Coal Regulatory Program

October 20, 2010

TO: Internal File

THRU Daron R. Haddock, Permit Supervisor

FROM: James D. Smith, Environmental Scientist III 21Oct2010

RE: 2010 Second Quarter Water Monitoring, PacifiCorp, Deer Creek Mine. C/015/0018, Task ID ~~#3557~~ #3559 SDS

The Deer Creek Mine monitoring plan is described in Appendix A of Volume 9 of the MRP.

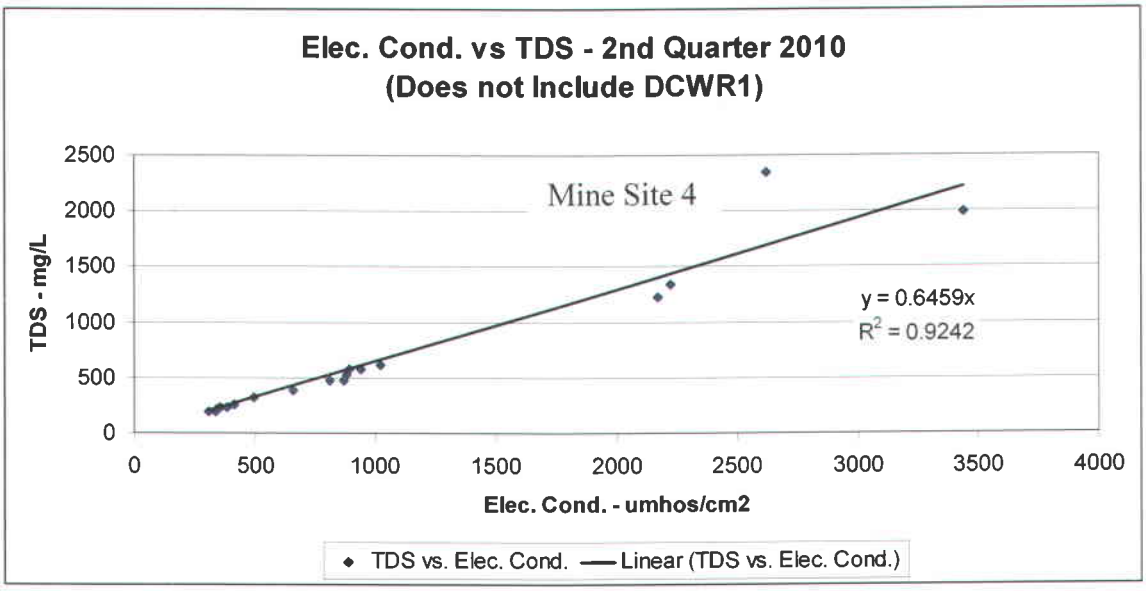
1. Were data submitted for all of the MRP required sites?

Streams	YES ☒	NO ☐
UPDES	YES ☒	NO ☐
In-mine	YES ☒	NO ☐
Springs	YES ☒	NO ☐
Wells	YES ☒	NO ☐

2. Were all required parameters reported for each site? YES ☒ NO ☐

3. Were any irregularities found in the data?

The TDS/field electric conductivity ratio typically falls between 0.55 and 0.76 for dissolved solids concentrations found in natural waters. As the following chart shows, data for these two parameters submitted for the Second Quarter 2010 at the Deer Creek Mine generally result in a ratio that falls within this range.



The ratios at Mine Site 4 and DCWR1 are outside the expected range, possibly because of the higher TDS levels in those waters. The following table compares the five sites with the highest TDS values in the 1st Quarter 2010 to values from the 2nd Quarter. TDS and field electric conductivity values remain high at DCWR1 and Mine Site 4 but have dropped considerably at the other three sites, and the TDS/field electric conductivity ratio at RCW4 is now within the expected range.

	1st Quarter 2010			2nd Quarter 2010		
	EC (field) µmhos/cm	TDS – mg/L	TDS/EC.	EC (field) µmhos/cm	TDS – mg/L	TDS/EC
RCW4	1540	1233	0.800	498	315	0.635
UT0023604-001	(1/5/10) 3680	2408	0.654	(5/5/10) 2225	1337	0.600
MINE SITE 4	2530	2424	0.958	2620	2352	0.898
UT0023604-001	(3/1/10) 4950	2953	0.596	(4/7/10) 3440	1989	0.578
DCWR1	17009	16537	0.972	17580	16575	0.943

Parameters listed below were more than two standard deviations from the mean. An asterisk (*) indicates this is not a parameter required by the MRP. Parameters in bold type were also more than two standard deviations from the mean during the previous quarter.

Streams YES ☒ NO ☐

DCR04 April: **flow**;
DCR04 May: **flow**;
DCR06 April: **flow**;
DCR06 May: **flow**;
DCR06 June: **K**;
MF-A June: field electric conductivity, flow, TSS, D-Mg, D-Na, SO4, total alkalinity*, total hardness, lab electric conductivity*;
MF-B June: TSS, Cl, total alkalinity*,
MFU-03 June: flow;
RCF-1 June: flow,
RCF-2 June: flow,
RCF-3 June: pH,
RCLF-1 June: field electric conductivity,
RCLF-2 June: field electric conductivity,
RCW-4 June: total alkalinity,

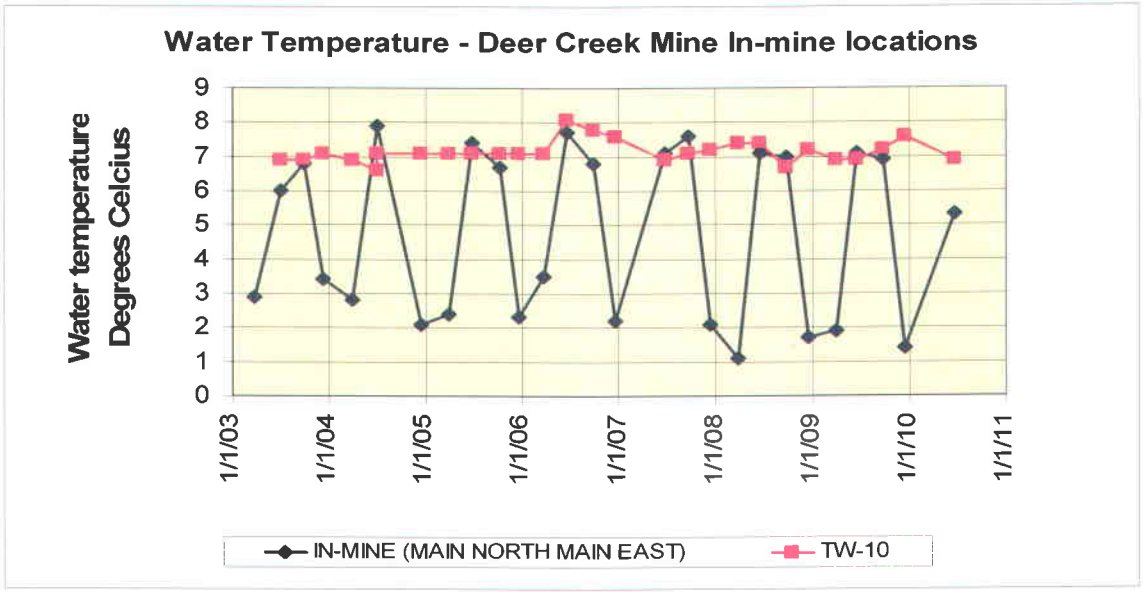
UPDES YES ☒ NO ☐

UT0023604-002 May: **K**.

Springs YES ☐ NO ☒

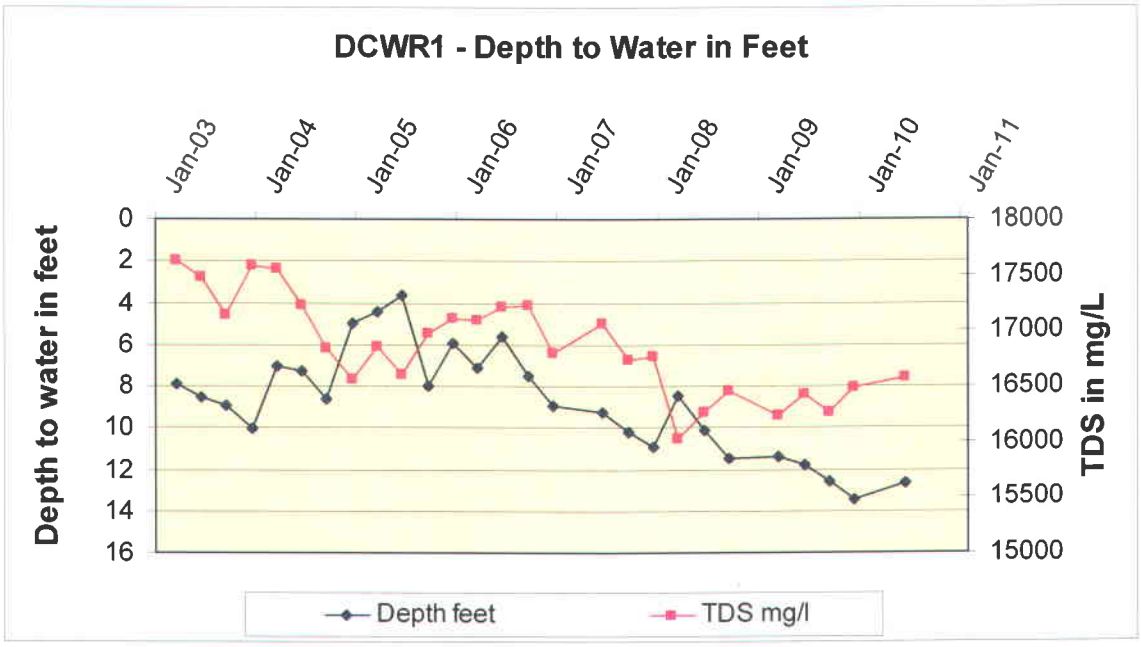
In-mine YES ☐ NO ☒

Water temperatures at Main North Main East vary seasonally year-after-year (see following chart), indicating that this in-mine source is most likely fed by infiltration of surface water rather than draining surrounding strata. The temperature at TW-10 shows some seasonal variation but it is not as clear as at Main North Main East.



Wells YES ☐ NO ☒

Although it hasn't been flagged as varying from the mean by more than two standard deviations, water level at DCWR1 has been dropping since the well was installed, and the rate appears to have increased since 2006 (following a small rise in 2004-2005). TDS is dropping at



a similar rate. This is probably from factors other than disposal of waste rock at this site: a similar drop in water level is seen at WCWR1 at the Cottonwood/Wilberg Mine Waste Rock Disposal Site.

4. On what date does the MRP require a five-year resampling of baseline water data.

Baseline analyses were performed in 2001 and are to be repeated every 5 years; baseline analyses were done in 2006 and should be done again in 2011: this schedule applies to all the PacifiCorp mines, irrespective of the permit renewal date. For the Deer Creek Mine, renewal submittal is due 10/07/10, and renewal is due 02/07/11.

5. Based on your review, what further actions, if any, do you recommend?

No further action recommended at this time.

6. Does the Mine Operator need to submit more information to fulfill this quarter's monitoring requirements? YES ☐ NO ☒

7. Follow-up from last quarter, if necessary. NA ☒

8. Did the Mine Operator submit all the missing and/or irregular data? NA ☒